

Light and Lighting

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of the
Illuminating
Engineering
Society.

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Will You Spend Half an Hour? ...

IN these words The President appeals to I.E.S. members to put in their notions and ideas about the future of the Society—how it can be altered for the better, made more representative or more influential, more useful both to its own members and the community.

We hope that there will be a wide response—not only from the fervent, youthful enthusiasts, intent on root and branch reform, but from those of experience whose instinct it may be not to stray too far from tradition. We need a representative cross-cut embodying all shades of opinion.

Naturally, few of these changes can be made at once. Some things may be done now, others, even after being approved in principle by members as a whole, may involve alterations in Articles and By-Laws, not lightly undertaken. There are sure to be cleavages of opinion.

It will take time to sort out these ideas, to discover which are desirable and practicable, which things should come first. Full realisation of developments can only be achieved after the war. But now is the time to collect and weigh ideas. It is a sign of vitality in the Society that "the pot is boiling." Stir it up, then let it simmer. Something will come out of it.

NOTES & NEWS ON

**I.E.S. Events in May**

The two days May 10 and 11 seem likely to be busy ones for many I.E.S. members. On both days there are committee meetings. For members as a whole there are, on May 11, the annual general meeting, the subsequent sessional meeting (at which Sir John Parsons is to give an address on "Light and Vision"), and the informal social evening—the latter a new departure. All members who wish to take part in the social evening are asked to let the hon. secretary know beforehand (if they have not already done so). The need for this will be readily understood in present circumstances.

Whilst we know full well the difficulties of travelling and securing accommodation in present circumstances we hope that a good number of members of Centres and Groups will be able to come up for the occasion.

Witnessing Measurements

We deal elsewhere with Mr. Preston's admirable paper on photoelectric photometry, read before the I.E.S. on April 13 (see p. 52). There are, however, several general points of great interest that were not very fully emphasised in the discussion. The first of these is the immense value of the photoelectric method of making the results of measurement *visible* in

a numerical form—not only to one or two observers gathered round an instrument, but to a large audience when the movements of the pointer are projected on a screen, as is frequently done in demonstrations at the E.L.M.A. Lighting Service Bureau. We regard this visible evidence as of vital importance in approaching members of the public—who may feel no real confidence in the reports of experts after squinting through a telescope and trying to balance the brightness of two adjacent surfaces.

Detecting Small Departures

Another valuable feature of the photoelectric method is freedom from personal bias. All those with long experience of photometry by visual methods know how very easy it is for the eye to be misled and the impression to be biased in looking for some expected, but very small, change in brightness. One must continually ask oneself, "Is it imagination?" There can be no such deception about the movements of a pointer or a spot of light. Photoelectric methods would have been invaluable for this reason, and also because of their greater sensitiveness, in the study of minute fluctuations in standards of light, such as those associated with the Harcourt pentane lamp, on which so much long and patient effort was expended.

Bradford Brains Trust

The Bradford Group, like others, has found the "Lighting Brains Trust" an informative and successful type of meeting. On April 8, Dr. J. W. Whittaker, chairman of the Leeds Centre, acted as Question Master. A representative panel included Mr. E. P. Mawson (architect), Mr. H. Teasdale (physicist), Mr. N. Hudson (gas engineer), Mr. J. G. Craven (electrical engineer), Mr. R. Pye (illuminating engineer), and "a Government official" especially concerned with industrial lighting. More than sixty questions had been received before the meeting. Of these, twenty-three were answered, very effectively, in the course of the evening.

There were a number of queries relating to post-war developments in domestic lighting. The Panel emphasised the need for more effective use of daylight, especially in the kitchen, the free use of fluorescent tubes, and the adoption of restful, diffused lighting in living rooms.

In connection with post-war street lighting, the Panel could not endorse a proposal for raising the value of illumination for "Class A" roads, but it *did* agree that the difference of between the maximum and minimum lumens per 100 feet of road might with advantage be lessened. It also turned down the idea of lighting by means of illuminated kerbs (a hardy annual, this!), pointing out the technical defects of such schemes and the difficulty in securing effective maintenance.

Other questions dealt with fluorescent tubes, "Ancient Lights," illumination in steam-laden atmospheres, the use of polar curves, and the stroboscopic effect of certain lamps.

An open question asked for de-

tails of present-day research on "quality" of light, and elicited some interesting and varied replies. In this connection, a communication from Dr. E. C. W. Smith, of the Department of Coal, Gas, and Fuel Industries at Leeds University, was read. (Dr. Smith had hoped to serve on the Panel, but had found himself unable to attend.)

The gathering was swelled by a party from the Manchester Association of Gas Engineers (Yorkshire Commercial Section), some of whom joined in the discussion. A vote of thanks to the Question Master and Panel, moved by Mr. Currier, gas engineer and manager, Bradford, ended a very successful evening.

Lighting in the Home

Members of the Cardiff Centre, besides the activities of their own meetings, are evidently taking opportunities of doing a little missionary work elsewhere. We hear that Mr. D. C. James recently gave a lecture on "Lighting in the Home," which was very much appreciated, before a meeting of the W.V.S. in the Swansea Technical College. This is a point which Centres and Groups should bear in mind—the expediency of lecturing to other bodies or co-operating with them in joint meetings from time to time.

I.E.S. Annual General Meeting

May 11th. Annual General Meeting and Sessional Meeting. Address by SIR JOHN PARSONS on "Light and Vision." (At the Institution of Mechanical Engineers, Storey's Gate, S.W.1.) 4.30 p.m.

Informal Social Evening. (At Magnet House, Kingsway, London, W.C.2.) 6.30 for 7 p.m.

Photoelectric Photometers

by J. S. PRESTON

Proceedings at the Sessional Meeting of the Illuminating Engineering Society on April 13. The full text of Mr. Preston's paper will be published in due course in the *Transactions* in London.

There was an excellent attendance to hear Mr. Preston's paper on "Photoelectric Photometers: their Characteristics, Use, and Maintenance," at the Sessional I.E.S. Meeting held at the E.L.M.A. Lighting Service Bureau on April 13—which shows that members are not necessarily deterred by a somewhat intricate subject. It was rather a pity that—through no fault of the author—the complete paper was not available before the meeting; but members will be all the more interested in the full text when it appears in the *Transactions*.

The paper examined at considerable length the problems arising in the application of emission photocells and of selenium rectifier cell to photometry. It dealt both with fundamental difficulties (e.g., correction to "standard eye" characteristics) and with technical details; with the possibilities and limitations of photoelectric photometers, and the precautions necessary to ensure results of the highest possible accuracy.

Mr. Preston divided his paper in ten main sections. In the first, thermal, photographic and photoelectric methods of measuring radiation were briefly compared, and the advantages of the last named for routine photometry noted. In the second, the general problems of applying photocells to photometry were discussed. The third dealt, under separate headings, with the characteristics of emission photocells, as they affect the performance of the photometer—the best cells to use, stability, scale linearity, correction filters, dark current, use of sector disks, and so on. The fourth described

the principles and methods of use of the two circuits most used with the emission cell—the direct reading and the integrating systems. The fifth and sixth sections covered the same ground for the selenium rectifier cell, the circuits described being the simple light-meter circuit, the Campbell-Freeth circuit, and balanced-cell systems. Section seven mentioned various miscellaneous applications. In section eight a portable emission cell photometer was described, as a typical example. This photometer embodies a two-stage D.C. amplifier, including an electrometer tetrode, giving a current gain of 2.10^7 , and stability adequate for measuring photocurrents down to 5.10^{-14} amp. (At the end of the written paper eighty-one references are listed, so that it contains a valuable record of experience in this field.)

Mr. Preston explained that the paper is based largely on experience accumulated over the last ten years at the National Physical Laboratory. Although he modestly contended that it included little that is novel (except the photometer described in section eight, and a mention of work, as yet incomplete, on the fatigue of rectifier cells illuminated by monochromatic light of various wavelengths) it was quite evident that a great deal of it was fresh information to many of those present.

There were a number of very interesting and slickly performed experiments illustrating special features of and advantages of photoelectric photometry, as well as the various "snags" (some very liable to be overlooked except by the expert) attending their use. The author, at the close of the evening, paid a well-merited tribute to his assistants from the N.P.L., who had made preparations for the various experiments and assisted in demonstrating them.

There were many interesting points touched upon in the discussion, in which experts on photoelectric methods and others who confessed themselves more at home with the old familiar visual methods joined issue. Examples of the extreme sensitiveness of photoelectric photometers in detecting small errors and effects were mentioned. A distinction was, however, drawn between

"precision" and "accuracy" (is there really a vital difference?). Certain marked advantages of the photoelectric method in certain other directions, e.g., in demonstrating to an audience and the good qualities including stability of modern cells, were emphasised.

There was some speculation about the operation of the Campbell-Freeth circuit, which appeared to be regarded as something of a mystery, and much discussion on "things one ought to know" in connection with photoelectric cells. These included the variation in colour-correction factors for different forms of cells, the effect of thermionic currents, the nature of the departure from the cosine law of the surface of which light was received and the expediency or otherwise of a layer of matt varnish. The question was raised whether any appreciable fatigue might be caused by subjecting cells to high illumination, but it was agreed that modern cells could at least be exposed to illuminations up to 500 ft.c. without ill effects.

One interesting and curious point raised by Mr. Preston in his concluding remarks deserves mention—namely, whether photoelectric photometers would register quite correctly with fluorescent lamps, not apparently so much because of the colour of the light but because the light was intermittent.

Light and Colour

Recent Publications of the Physical Society

We have been favoured by reprints of certain useful contributions presented at recent meetings of the Colour Group, e.g., those on "A Photoelectric Tricolorimeter" (G. F. G. Knipe and J. B. Reid), and on "The Physical Significance of the Dyer's System of Colour Matching" (G. S. J. White, T. Vickerstaff, and E. Waters).

We have also before us a copy of the admirable Newton Tercentenary Lecture recently delivered by E. N. de C. Andrade. The text is enlivened by portraits of Newton, pictures of apparatus, and reproductions of original manuscript. Few people, probably, are aware of the volume of Newton's work on light and optics, which illuminating engineers should gratefully recognise.

What is Wrong with Lighting Fittings?

In the course of a recent discussion on this subject arranged by the I.E.S. Bath Group, different points of view were expressed by representatives of manufacturers, supply undertakings, consulting engineers and contractors. Some speakers seemed to hold the view that weaknesses were due more to incorrect choice or use of fittings than to faults in design, though the bugbear of cost was mentioned by Mr. N. E. Shephard and others, who contended that many domestic fittings were of the "cheap and nasty" variety. He suggested that the I.E.S. should produce a code in regard to quality of glass, size of baseplates, maximum temperature rise to safeguard flex and bakelite holders, etc. Mr. Shephard further suggested that fittings should carry some certificate of quality, together with indications of mounting height and size of room; and Mr. J. B. Harris, on somewhat similar lines, urged the need for a satisfactory B.S.I. specification.

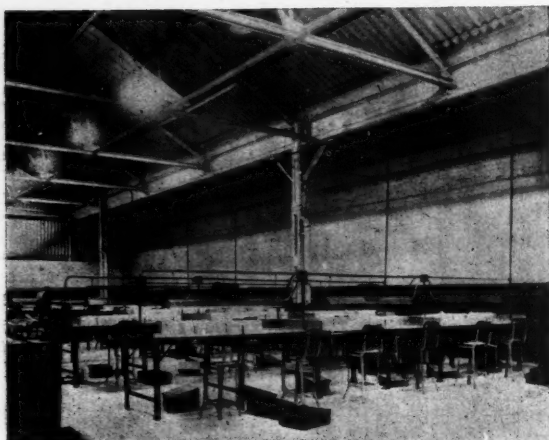
Several speakers, however, e.g., Mr. L. C. Rettig and Mr. Farrer, emphasised the importance of a properly planned installation and the necessity of consultation with the lighting expert at an early stage in the design of buildings.

Photography in the Drawing Office

A lecture on the above subject by Mr. F. J. Tritton, B.Sc., F.I.C., F.R.P.S., is to be delivered before the Royal Photographic Society at 5 p.m. on Tuesday, May 25.

After a brief historical review the author will discuss the advantages of the various silver emulsion processes (contact, reflex, reduced and micronegatives) for improving the reproduction of poor or weak drawings or blue prints and for facilitating storage and indexing; also the latest techniques for developing templates, models, jigs, etc., by photographic methods from the drawing.

Members of the Illuminating Engineering Society interested to hear this lecture are cordially invited to attend and are requested to communicate with the Secretary of the Royal Photographic Society of Great Britain, 16, Princes-gate, Kensington, S.W.7.



Lighting for Inspection Work

This picture shows the lighting for fine inspection work of benches in the works of British Timken, Ltd. Mazda 80 watt 5ft. fluorescent lamps are mounted centrally over single benches. This lighting, installed by Electrical Installations, Ltd., and designed by the B.T.-H. Co., Ltd., is supplementary to the general lighting, which is also very good.

The Window Scale.—An ingenious form of window scale, to assist the determination of daylight factor per foot width of window, has been devised by Mr. A. F. Dufton, M.A., D.I.C., and is described in the Transactions of the Illuminating Engineering Society (London); Vol. VIII, No. 3, March, 1943, p. 61. We understand that this window scale may be purchased from Messrs. C. F. Casella and Co., Ltd., Regent House, Fitzroy-square, London, W.1. (Price, 6s. 3d., post free in U.K.)

Mr. J. J. Kelly

We note with regret that Mr. J. J. Kelly, who had been in the service of Messrs. Siemens Electric Lamps and Supplies, Ltd., for nearly thirty years, has been obliged to retire owing to ill-health. As a traction lighting specialist he did much pioneering work in connection with the lighting of railway and tramway vehicles.

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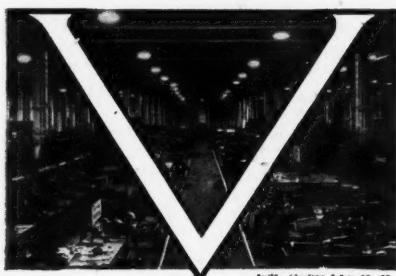
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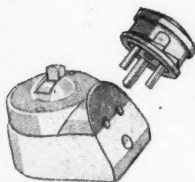
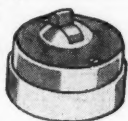
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BRANCHES THROUGHOUT THE COUNTRY

Plastics in War-time Lighting National Security (Industrial Lighting) Regulations in Australia

A note on the above subject by M. H. Bigelow ("Illuminating Engineering," February, 1943) is instructive both in recording new applications of plastics in war time and in showing how extensive their field of application in the lighting field prior to the war had come to be.

In various forms plastics found application for semi-indirect luminaries, fluorescent fixtures, transportation lighting devices, and for lighting bowls ranging in size from 12 in. to 26 in. in diameter—for which their pleasing colour, low brightness, and light weight made them very suitable. They were also beginning to be used for reflector and enclosing covers. Urea resin laminated paper and textiles were already being used as covers for fluorescent lamps.

But for the outbreak of war the output would have increased still further, especially in the fluorescent field. Moulded plastic troughs are being applied in connection with fluorescent tubes. There has also been an enormous demand for phosphorescent and fluorescent materials, incorporated in plastic material used for luminous switch plates, insignia, lamp shades, etc., in areas in which a blackout is being imposed. With the curtailment of steel for reflectors, plastics are being applied to fill the gap. Aluminium and brass tubing are similarly giving way to plastic materials, which may continue to replace steel, copper, and brass for many purposes even after the termination of the war. The immediate effect of war was to bring about complete stoppage in many directions. But shortages of other materials have subsequently led to the application of plastics to many special war purposes. Plastics are proving particularly useful in the Navy for airport markers and in situations where shocks are apt to be encountered, and the tendency of glass to shatter is an evident drawback.

We note that Australia has followed the lead of this country in establishing legislation on industrial lighting in factories engaged on work of national importance. The Department of Labour and National Service has substantially adopted the recommendations in the Australian Code of Lighting of which particulars were given in this journal a few months back, but as that code was not quite suitable for mandatory legislation a document which serves as a legal equivalent of the Code has been drafted and is now in force. Other regulations relate to priority of factories engaged on vital work in respect of lighting improvements and the provision of available materials and equipment.

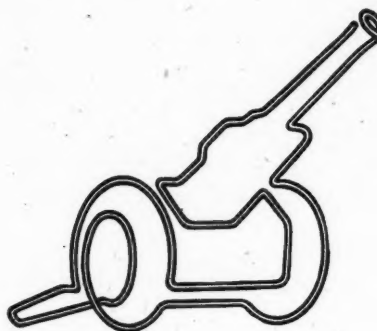
Steps are also being taken to place at the disposal of the Department the best technical advice on lighting. In this connection we are interested to learn that Mr. H. Ayres Purdie, illuminating engineer to the Lighting Centre in Sydney, has accepted an appointment as Chief Illuminating Engineer to the Ministry of Munitions.

Obituary

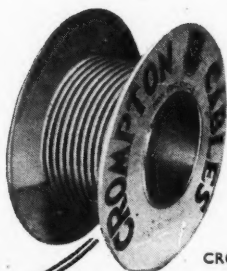
DR. JAMES E. IVES.

We note with regret the death, on January 2, of Dr. James E. Ives, a leading member of the Illuminating Engineering Society in the United States, and formerly chief physicist of the United States Public Health Service. In this country Dr. Ives is known for his researches on lighting in the United States Post Offices and other Government buildings. His researches were amongst the first showing definitely the effect of higher illuminations on the performance of such tasks as letter sorting. Subsequently he devoted himself to the study of natural lighting, and was responsible for many researches that appeared in the Transactions of the Illuminating Engineering Society in the United States.

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Public Lighting

Preparations for Ultimate Restoration

(In what follows we give some further account of the address on the above subject given by Mr. E. J. Stewart before the joint I.E.S.—A.P.L.E. meeting on March 17, noted in our March issue, p.38).

Of all forms of lighting, the future of street lighting—its nature when the black-out is ended, and the speed with which it can be restored—is of the greatest topical interest. Post-war reconstruction is in the air. Some authorities are no longer considering "standard starlight" but are preparing for resumption of normal lighting on the cessation of hostilities. The opportunity may occur in summer-time, giving some time for preparation—but it might also come during the dark months, when instant action would be demanded. Preliminary preparations should therefore be made.

There will be plenty of material for discussion by experts. The public, however, will expect more light provided as quickly as possible. Relighting rather than new lighting will be sought—except in completely destroyed areas, where completely new installations will be needed.

Discussing existing plant, Mr. Stewart gave data in regard to demands in Glasgow (mentioned in our last issue). Quick methods of changing over from A.R.P. lighting to full—or nearly full—street lighting are needed. The possession of war-time street lighting is of great benefit in preparation for full street lighting. It ensures that equipment is examined more or less regularly, so that defects in fittings, switches, etc., are found before they go too far. It also causes gas obstructions and cable faults to be detected. Knock-outs and damage receive some attention—though new pillars and fittings are hard to obtain. [In Glasgow at least 870 cast-iron pillars and thirty-one steel poles have been knocked down damaged by vehicles since the war began!] With A.R.P. lighting in operation there is reason for keeping some supervising staff and recruiting women labour.

After the war arguments about the criteria of good street lighting visibility

will doubtless be resumed, but the man in the street will welcome anything obviously brighter than at present, if quickly provided. If screens are removed from 1.7 cu. ft. gas burners and 15-watt electric lamps; or better still if 4-6 mantle burners and 100 or 300-watt electric lamps can be substituted this will be a great gain; for a time we may have to bear some degree of glare and imperfections in distribution—so long as we get the happy "feeling" of more light. Immediate increase in brightness at, say, 300 points is better than more permanent lighting at 100.

Mr. Stewart then went on to quote from the recently issued A.P.L.E. leaflet ("Prepare NOW to Light Up Your Streets"), and the judicious advice in regard to maintenance.

He also endorsed the advice not to scrap poles or pillars. At present about a sixth of existing poles are carrying war-time street lighting, and have gas piping and cable connected.

Dealing with future conditions, Mr. Stewart quoted from a report, already prepared by Mr. Hale, in regard to re-lighting in Glasgow, analysing the various difficulties likely to be met. The attitude of the Government needs some consideration. Restrictions are not likely to be completely relaxed immediately after an armistice. With a view to avoiding sudden increases in load restoration of lighting might at first be made in the main streets only. There are also supplementary problems such as the treatment of illuminated street traffic signs and the diversion to peace-time purposes of A.R.P. signs applied to equipment used in connection with shelters, first-aid posts, etc.

Even if Britain is regarded as absolutely safe from aerial attack restriction of fuel for some period may limit complete restoration of public lighting. Some lessons learned in the black-out, such as the value of white paint, should not be forgotten. There is also the prospect that public lighting may be subject to Government control in the interests of uniformity, etc. The question of financial aid to lighting authorities in bringing about restoration is an important one.

Reviewing the future, Mr. Stewart expressed the belief that the demand for greater illumination, and the consciousness of need for it will certainly grow, though there will also come a demand for better quality of light.

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National Illumination Committee of Great Britain

(Affiliated to the International Commission on Illumination)

Constitution of the Committee on December 31st, 1942

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Institution of Electrical Engineers: LT.-COL. K. EDGCUMBE, P. GOOD, PROFESSOR J. T. MACGREGOR-MORRIS, DR. C. C. PATERSON, J. W. TOWNLEY.

Institution of Gas Engineers: W. J. A. BUTTERFIELD, J. E. DAVIS, G. DIXON, E. V. EVANS, S. LACEY.

NOMINATED BY THE CO-OPERATING ASSOCIATIONS:—

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Air Ministry: C. B. COLLINS, E. C. HYDE.

Association of Public Lighting Engineers: E. J. STEWART.

British Commercial Gas Association: D. CHANDLER.

British Electrical and Allied Manufacturers' Association: C. RODGERS.

British Electrical Development Association: A. C. CRAMB.

Department of Scientific and Industrial Research (National Physical Laboratory): T. SMITH, DR. J. W. T. WALSH.

Electric Lamp Fittings Association: G. CAMPBELL, T. E. RITCHIE.

Electric Lamp Manufacturers' Association: W. J. JONES, C. W. SULLY.

Glass Manufacturers' Federation: E. J. C. BOWMAKER, G. MARCHAND.

Home Office: E. W. MURRAY.

Incorporated Municipal Electrical Association: E. J. JARVIS.

Industrial Health Research Board: H. C. WESTON.

Institution of Municipal and County Engineers: E. J. ELFORD.

Medical Research Council: DR. H. HARTRIDGE.

Ministry of Health: A. SCOTT.

Ministry of Supply: COL. SILVESTER EVANS.

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Ministry of Works: G. SMITH.

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LT.-COL. K. EDGCUMBE and DR. H. BUCKLEY.

Annual Report for the Year 1942

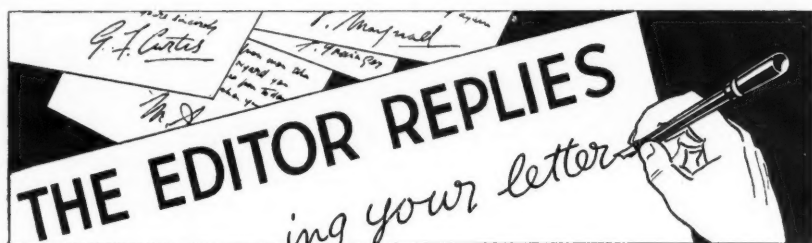
(Presented at the Annual Meeting of the Committee held on Tuesday, March 9, 1943)

The only activity of the National Committee during the past year has been the statutory annual general meeting.

The one change of membership which has occurred during the year has been made by the Air Ministry, who have nominated Mr. E. C. Hyde, in place of Mr. W. J. F. Wellard.

The following British Standard Specifications have been issued during the year: No. 1050, dealing with visual indicator lamps; No. 1075, on studio spot-light lamps; and No. 1015, on excitor lamps for 35 mm. projectors.

K. EDGCUMBE, *Chairman*.



I have been asked what is meant by the "**three dimensional seeing**," which I gather is a term applied to conditions alleged to be realised with certain modes of factory lighting, combined with a system of decoration which causes objects to "stand out." This last condition is always realised to some extent when a judicious contrast between machinery and its background is secured.

I understand from Mr. E. W. Murray, however, that something more than this is implied and that the alleged three-dimensional effect is associated with the use of **contrasting colours**. This may have some basis in fact. Difference in colour may achieve contrast when there is not a great difference in brightness. Furthermore, owing to the chromatic aberration of the eye, the use of complementary colours for object and background may achieve a certain emphasis of perspective—a red-painted object, for example, in general tends to advance, whilst a blue or violet background tends to recede. The use of such vivid colours hardly seems likely to become general but there is a case for the judicious use of moderate and judicious colouration to create variety and produce a cheerful effect.

The comment in "Punch," mentioned in our last issue (p. 34), has led to comment and some criticism. I do not say that the reviewer was right in his comment nor can I support the paradoxical claim that has sometimes been made to the effect that "**The expert is always wrong!**"

On the contrary, the expert is usually (though not always) right on technical points, on which his views deserve

respect. But when one comes to the **application of technics in daily life** he cannot be the sole authority—his view is apt to be narrow and biased, not necessarily by trade interests but by his pre-occupation with his own subject. We seek the advice of the medical man on health—but we should all be loath to entrust him with the control of our daily life in the interests of health. In lighting, where the **human element** plays such a large part, this distinction is particularly important. We should do well to make an ally of the user, not to thrust our views upon him.

Since our note on "Light the Stairs" we have had an opportunity of witnessing some **improvements in lighting** now being introduced on **stairways** to tube stations. These are very welcome. It is a relief to observe the replacement of blackened bulbs by unobscured ones of low wattage. One now finds that the interior lighting is usually at least sufficient to mitigate the paralysing shock to the eye which is inevitable if one passes from the bright daylight outside to almost completely darkened stairs. It is a curious reflection that it often requires some unforeseen calamity to bring about quite reasonable improvements. Yet the circumstances before and after the mishap may be just the same and the need for improvement just as evident.

I have been gratified by the restoration of what is **almost normal lighting** on certain **escalators** which I use daily. Reasonably good lighting for moving stairways makes a special claim. Consider the lesson of a familiar demonstration at the E.L.M.A. Lighting Service Bureau—the effect of diminished illumination in apparently speeding up

movement. If the illumination is low enough movement becomes apparently too quick to be perceptible—a disconcerting effect on escalators which are sometimes in movement and sometimes not.

By the way, although this effect is unmistakable the explanation is not quite evident. It seems to be associated with the duration of retinal impressions and is illustrated in the use of the **flicker photometer**, the frequency of which needs adjustment according to the illumination to be measured.

I hear that the regulations limiting the consumption of electricity and gas for **lighting in shops, hotels, etc.**, issued last autumn* in the interests of **fuel economy**, have been readily accepted and have caused little real difficulty or dispute. This surely illustrates the advantage of seeking expert advice and ensuring, by frank discussion with those interested, that the justice of such orders is recognised. A little forethought would have avoided the original mistaken approach to this problem

* LIGHT AND LIGHTING, Oct., 1942, p. 124.

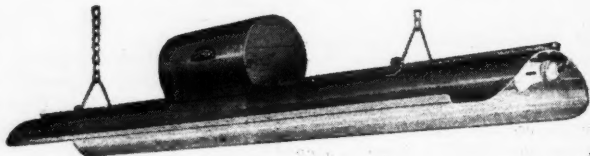
—which led to the appearance of Mr. R. O. Ackerley in Court as expert witness and to the dismissal of the case against the Strand Palace Hotel.

Reference has been made to a statement in the *Daily Press* to the effect that **war-time street lighting** is to be extinguished, presumably in the interests of fuel economy, during the summer months. The economy to be derived is surely minute and in normal circumstances one would deprecate the cutting off of street lighting during any part of the year. The drawback, however, in this instance is not so very great.

It must be confessed that whilst war-time street lighting is of genuine benefit on very dark and overclouded nights when there is no moon, it is less often of service during the light summer nights, especially in view of the operation of double summer time. We have always regretted that the value of war-time street lighting (0.0002 ft.c.) had to be fixed at such a very low level: had it been ten times as great its absence during the summer would be of greater moment.

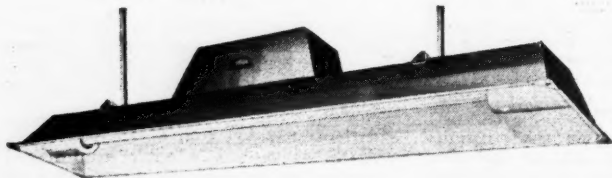
Fittings for Fluorescent Tubes

This fitting is of strong make and pleasing contour with control gear housed on the top, and is supplied wired ready for use.



The fluorescent tubular lamp is now familiar, and considerable attention is being given to the design of the fitting for use with it. The two adjacent illustrations show types of

"Sieray" equipment now listed by Siemens Electric Lamps and Supplies Ltd., and figure in a recent leaflet entitled "Seeing under Natural Conditions."



This fitting is similar to that shown above but is meant for use in places where something better than the standard industrial reflector is required.

